

# **THE CASPIAN HORSE OF IRAN**

by

Louise Firouz

## PREFACE

Several years ago word spread that a new breed of horse, like a miniature Arabian, had been found on the shores of the Caspian in Iran.

In 1965 five Caspian ponies were brought to Louise Firouz in Tehran for riding by her children.

Louise Firouz was born in Washington, graduated at Cornell where she studied animal husbandry, classics, and English. In 1957 she married Nancy Firouz and moved to Tehran where she is occupied in farming and raising horses.

Following the arrival of the five Caspians, a three-year survey was begun to search for more of these horses. She covered part of an area from Astará to Pahlevi-Dej located east of the Caspian. About 20 ponies are estimated to live between Babol and Amol (Map 1). Six mares and five stallions were brought to the breeding farm at Norouzábad near Tehran.

In 1966 a stud book was established to encourage purity of the strain. Dr. Hosseinion, Tehran Veterinary College, regularly inspects foals and adults.

The similarity between the Caspian and the horses pulling the chariot of Darius and the ponies on a bas-relief at Persepolis is significant.

The above has been summarized from the illustrated article by Louise Firouz in *Animals*, June, 1970 (see Bibliography).

My interest in horses ancient and modern stems from the *Equidae* excavated at Kish, eight miles east of Babylon, by the Field Museum-Oxford University Joint Expedition to Iraq, 1923-34.

In 1928 I was one of the Staff members of this Expedition under Field Director Louis Charles Watelin. In Y Trench we found the oldest wheeled vehicles with the animals in the shafts (see FMNH Anthropology Leaflet No. 28).

I sent the skull and bones of the *Equidae* to Dr. J. Wolfgang Amschler, Director, Institut für Bodenkultur, Vienna. Here is the largest collection of *Equidae* for comparative study.

In addition to the article listed in the Bökönyi Bibliography, the following by Amschler were placed on microfilm in the American Documentation Institute (ADI), c/o Photoduplication Service, Library of Congress, where a copy may be purchased.

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### *ADIM* No. 7596. THE DOMESTICATION OF ANIMALS IN SOUTHWESTERN ASIA: I.

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The *Equidae* were returned to Field Museum of Natural History. The Kish fauna, especially my collection from Y Trench, is now being restudied by Dr. Charles Reed in Chicago.

References to horses are given in my monograph entitled, Contributions to the Anthropology of Iran, Vols. 1-2, pp. 176, 182, 187, 190, 198, 203, 218. Field Museum of Natural History, Anthropological Series, Vol. 29, Nos. 1-2, 1939. Edition in Farsi. Franklin Book Program, Tehran, 1965.

During the Peabody Museum Harvard Expedition to the Near East, 1950, I was guided to two sinkholes near Haditha in northern Iraq. Here with the assistance of Dennis Batten, Iraq Petroleum Company, we collected hundreds of animal bones including a fine series of *Equidae*. These are in the Museum of Comparative Zoology, Harvard.

Attention must also be called to the monograph on Kish by Dr. McGuire Gibson based on his Thesis submitted to the Oriental Institute, University of Chicago. This will be published shortly by Field Research Projects.

With regard to modern horses, I was brought up in High Leicestershire with my step-father, Major A. E. Burnaby, as Master of the Quorn Hounds.

During research throughout Southwestern Asia, I have seen many Arab horses belonging to Rulers and Paramount Sheikhs of great Beduin tribes of the desert.

Thus, the discovery of a new breed of horses near the Caspian was of the greatest interest.

The retyping and proofreading were done by Mrs. Kathryn Rushing. We are grateful for her expert assistance.

Mrs. Eva Nyqvist typed the manuscript on her IBM "Composer" in Palo Alto, California. Her multilingual knowledge and technical skill have produced the text for photo-offset by Edwards Brothers, Ann Arbor.

We are grateful to Louise Firouz for assembling this material. We are indeed pleased to publish these Reports on the Caspian horse under the imprint of Field Research Projects.

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HENRY FIELD

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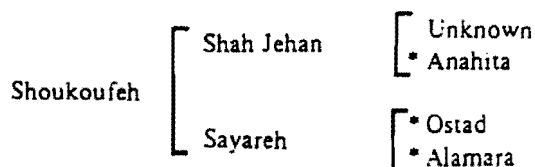
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*Note:* Pedigree of No. 4.



\*Fourdahan stock.

MAP

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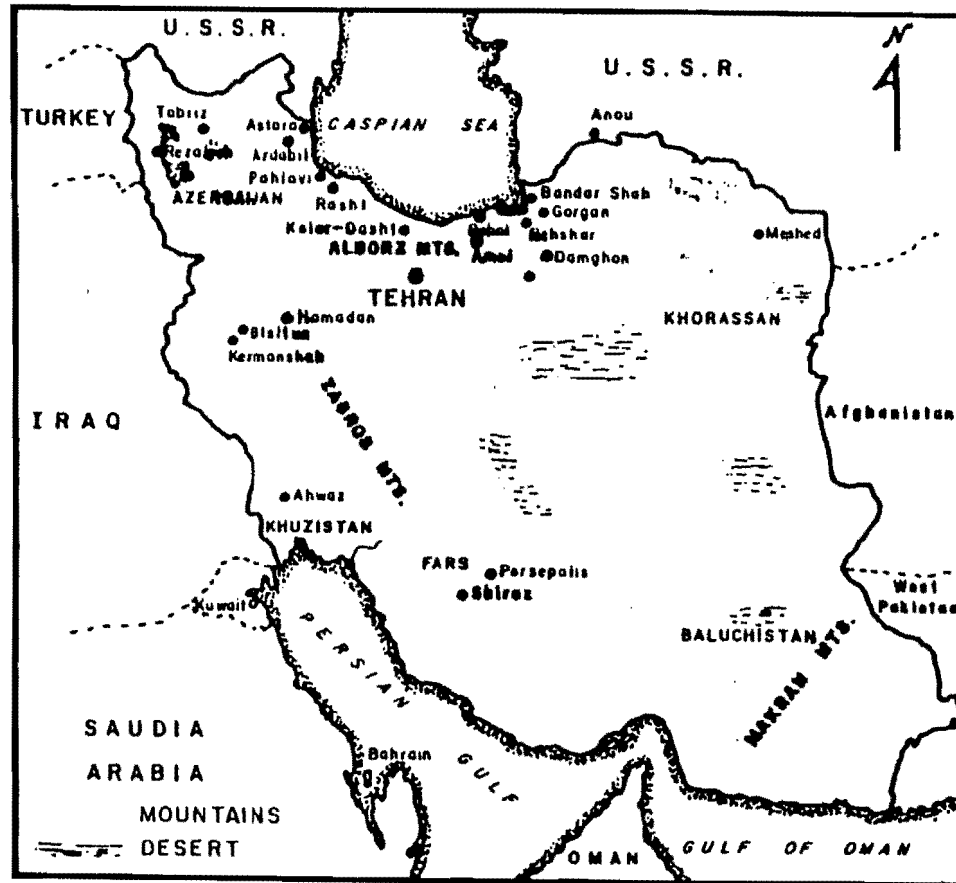
## FOREWORD

I wish to thank Dr. Henry Field for his patience in waiting so long for the finished manuscript and for the invaluable reference material: Mrs. M. A. Littauer for providing sufficient funds for the very necessary research of faunal remains from archaeological sites and the constant flow of papers, pamphlets, xeroxes and books and the encouragement required to sustain the effort over the past seven years: The British Institute for Persian Studies, especially Mr. David Stronach, for their full coöperation with faunal material from their sites and administrating Mrs. Littauer's grant: Dr. M. Hosseinion, Director of the Large Animal Clinic, College of Veterinary Medicine, University of Teheran, for his full and sympathetic coöperation over the past seven years: and finally, my husband, Nancy Firouz, for providing all the financial assistance to feed and house the Caspians and for putting up with the innumerable absences and domestic derelictions this study has entailed.

During the summer of 1971 the predominantly Parthian site of Shahr-e-Kumis near Damghan produced a large variety of equid bones and skulls. A preliminary and very cursory study revealed the presence of two distinct types of large *Equus caballus* skulls. One type showed a typically "Nisaeen" swelling from occiput through the nasal bones while the other exhibited a vaulted cranium which, however, "dipped" at the frontal bone and continued in a straight line through the nasal. Mrs. M. A. Littauer, who very kindly gave a grant for the preliminary study of equid remains from archaeological sites in Iran (1969), managed by the British Institute for Persian Studies, is making it possible to continue the studies in the summer of 1972. Dr. Sandor Bökönyi, who did the original work, has kindly agreed to undertake this further study.

*Louise Firouz*

10 Damghan  
Tehran



Map 1. General map of Iran.

## THE CASPIAN MINIATURE HORSE OF IRAN

The subject of miniature horses in Iran originally came up during the winter of 1964-65 when several eager young riders felt that their chances of learning how to ride properly were being thwarted by the spirited, hot-blooded stallions they were offered to ride. As a result, an expedition to the Caspian Sea was mounted to see if small horses for children could be found. The results were three very fine, small animals who more than fulfilled the expectations of the children awaiting them. Approximately 20 more followed the original three and the abilities of these small horses as children's riding ponies have been proven during the intervening six years to the delight of all who have learned to ride on them.

Although the subject could have been happily left at that, there was an elusive beauty and grace about this small horse which did not seem to fit into the accepted picture of ponies. Ponies are chunky, strong little equids generally developed under austere conditions of climate and food. Why a "pony" on the relatively lush shores of the temperate Caspian; and, in spite of his small size, was the light, graceful animal on the Caspian a pony at all? Was there any historical precedent for a pony-sized horse in Iran and, if so, how well documented was it? These questions initiated a study in the spring of 1965 to determine the range, nature and historical precedent for a horse of this size in Iran.

### Physical Description

The Caspian stands from 100 to 120 cm. at the withers. The head is short and fine with large eyes, a pronounced development of the forehead, small muzzle and large nostrils placed low on the muzzle. The ears are very short, not exceeding 11 centimeters.

The neck is slim and graceful, leading into sloping shoulders, good withers, straight back, slim body and high-set tail. The legs are slim with dense, strong bone (average circumference of the foreleg, measured just below the knee, is 14 cm. for stallions and 13 cm. for mares). There is no "feathering" at the fetlock. The hoofs are extremely strong and oval-shaped.

Caspian have a kind disposition, are intelligent and very willing to work. They are spirited without meanness or unruliness. Stud stallions are regularly ridden together by small children and released together in the same pasture. They are capable of keeping up with a normal horse at all gaits except the rapid gallop. The gaits are characterized by a long walk, occasional natural single foot, long swinging trot with a natural far-reaching action, smooth canter and very rapid flat gallop. The jumping ability can only be described as extraordinary.

The overall impression of the Caspian, from the tip of its muzzle to the crested, flowing tail, is that of a very small, well-proportioned horse. Subsequent studies confirmed the visual picture osteologically (Bökönyi, 1972): the Caspian is a miniature horse, not a pony.

### Geography and Location

The present range of the Caspian extends from Behshahr near the Turkoman Steppes on the eastern side of the Caspian to approximately Bandar Pahlavi on the western side. The

southeastern portion of the Caspian littoral is characterized by rolling countryside dotted with pomegranate and Circassian walnut trees melting gradually into the foothills of the Alborz (Elburz) Mountains. Wheat, cotton and tobacco are the major crops which furnished Turkomans and white-turbanned Zabolis cultivate with horses and water buffalo. Apart from the very occasional Caspian, the horse population is neatly divided between stocky, Mongol pony-type, small horses standing from 120-145 cm. and the tall, rangy, elegant Turkoman horse, standing 150 cm. at an average.

The former is usually to be found descending the mountains with massive loads of cut green wood, while the latter bows its graceful neck to the burdens of plowing, seeding and carting produce over the undulating fields bordering the Caspian Sea. Approximately midway along the Caspian at the division of the Provinces of Mazanderan and Gilan the littoral narrows and the mountains seem to hang out over the sea. The farther west, the more abundant the rainfall becomes, with more frequent rice paddies on the coast and tea plantations climbing the steep hillsides into the low-lying clouds. Here, the horse population consists primarily of the heavy-set, rather coarse, Mongol pony type.

A survey to determine the approximate numbers and range of the Caspians was undertaken in July, 1965 and concluded in August, 1968 (Firouz, 1969). Apart from spot checks of the horse population in most of the Provinces on the Iranian Plateau, the survey covered the area described along the Caspian coast where the miniature horses were first observed. Due to the difficulties presented by swampy and mountainous conditions, few feeder roads have been built off the main coastal road or the four roads which run from Teheran to join the coastal road. While this lack has preserved the prevalent horse economy it makes survey work a lengthy, if pleasant, occupation.

The initial stages of the survey consisted of checks in villages and towns along the main coastal road which runs from Gorgan on the eastern extreme of the Caspian Sea to Astara on the Iran-Soviet border. As this simply indicated the presence or lack of small horses with "Caspian" characteristics, a further survey from likely villages was conducted on horseback and by foot to check the distant pastures where the horses had been released to graze. This method was used along the length of the coast during all four seasons of the year. Visiting the local weekly bazaars for the horse sales also revealed interesting information as to the number and types of horses for each locale.

A seminomadic system of grazing is used for the herds of horses, cattle and sheep. During the summer months the animals are driven into the mountain pastures of the Alborz and Talesh Mountains to enjoy the abundant forest and mountain grasses. In the winter, cold and snow force the herders to seek the warmth of the Caspian coast where the animals winter on harvested rice and wheat. Thus, any survey of the animal population of the Provinces of Gilan and Mazanderan must necessarily include the summer grazing areas. Mounted expeditions were made into the Firouzkuh area, which forms the *yailaq* (summer grazing) of Sari; the Nur area, which forms the *yailaq* of Chalus and Alia-bad; and Kelardasht, situated in the foothills so as to be its own *yailaq* and *qishlaq* (winter grazing). The British Ambassador to Iran, Sir Denis Wright, contributed valuable information on the Talesh Mountain *yailaq* area of the western coast of the Caspian (Wright, 1967).

On the basis of this survey it was estimated that there were approximately fifty small horses with definite "Caspian" characteristics along the entire littoral of the Caspian Sea, with the major concentration being about 30 in a 3,400 square km. triangle between Amol, Babol and Kiakola. The individuals were so scattered, however, that it was concluded that it was virtually impossible for any of the remaining Caspians to be considered completely "pure."



### Breeding at Norouzabad

Seven mares and six stallions were bought in Mazandaran during a period beginning in 1965 and ending in 1970. This Foundation Stock has so far produced a total of 14 foals, of which 8 are colts and 6 are fillies. Of these 14 foals only one did not exhibit "Caspian" characteristics. The remaining 13 all have the small ears, characteristic bulging forehead, slim dense bone and oval-shaped hoof.

The growth rate of Caspian foals is distinctive in that most of the height is attained within the first six months and subsequent growth is minimal, being mostly in width and secondary sexual characteristics. Sexual maturity is reached in foals (both colts and fillies) at about 18 months.

The mares have a tendency not to ovulate until about a year after foaling, making a continuous breeding program difficult. Injections of FSH have proved useful in establishing a normal estrous cycle, as have additions of minerals in the feed.

In spite of improved conditions and feed, the mature height of offspring born at Norouzabad is 1-2 cm. below the average height of sire and dam. This would appear to indicate that the original size of the Caspian is closer to the 9 hands speculated from the Persepolis reliefs than the 10 to 11½ they now average (*i.e.* 90 cm. as opposed to 100-120) (*see* Firouz, 1970a). This also confirms that present stock is not completely pure and that breeding to type will further emphasize the characteristic conformation of the Caspian and lend to a return to the natural size of the animal.

The Caspians at Norouzabad are fed on bluegrass and clover pasture plus alfalfa hay. It has been observed that there is a much greater incidence of colic in the Caspians than there is in the other breeds of horses; worms, dirt and bulky food are the causative factors in producing colic.

### Bone and Blood Studies

In the summer of 1969 a mature Caspian skeleton was studied in comparison with bones of *Equus hemionus onager* excavated from first century B.C. graves of Shahr-e-Qumis, near Damghan in northwestern Iran, a predominantly Parthian site being dug by David Stronach and John Hansman of the British Institute of Persian Studies in Teheran (Hansman and Stronach, 1970). The study concluded (Bökönyi, 1972) that since the slenderness index of the metacarpal and metatarsal bones of the Caspian fell within the range of that considered normal for *Equus asinus* and *Equus hemionus onager* particular care should be taken in evaluating equid remains from archaeological sites in the future as identification on the basis of the slenderness index of the long bones was no longer conclusive evidence of the particular species of *Equidae*.

A preliminary comparative anatomy study (Sharesevi and Hosseinion, unpublished) of Caspian, Turkoman, Plateau Persian and one Percheron skeleton, together with live comparisons, concluded that there were five basic skeletal differences between the Caspian and all other breeds of horses studied as shown by the following:

1. The Caspian skull shows a pronounced elevation or bulging of the interparietal and parietal bones resulting in a difference of elevation of from 1.5-2.30 cm. above the frontal bone. Most distinctive of all, however, is that the Caspian possesses no parietal crest, the interparietal continuing unbroken to the nuchal crest of the occiput. The interparietal at its narrowest point measures from 1.0-1.5 centimeters.
2. The scapula of the Caspian is wider than in other Iranian breeds, forming an isosceles triangle, with the neck of the scapula being narrower and the head much wider.

Altogether it was noticed that the scapula of the Caspian more closely resembled that of a ruminant than that of a horse.

3. The metacarpal and metatarsal bones of the Caspian are much longer and slimmer, in comparison with the height of the horse, than those of other Iranian or foreign breeds.
4. In the Caspian the spinous processes of the first six thoracic vertebrae (T.1 to T.6) show a pronounced elongation as compared with other Iranian breeds. Because of this difference the withers of the Caspian are much higher than the croup.
5. The hoof of the Caspian, being narrow and oval-shaped, resembles the hoof of *Equus asinus* more than it does that of *Equus caballus*.

Although the chromosome and blood enzyme studies were not conclusive (Dr. James Bowman, personal communication), the different results obtained on each of the three separate tests suggest room for further study.

Tests for the differences in haemoglobin (Clegg and Hosseinion, personal communication) showed that whereas the normal reaction time on the starch gel electrophoresis for *Equus caballus* was 60/40, the Caspian exhibited a so-far unique 80/20.

#### Early Horse Domestication and the Caspian

The discovery of the Caspian has raised a number of interesting questions about early horse domestication in the Middle East and specifically Iran. Although it has generally been assumed that the horse was an Indo-European import sometime in the latter part of the Third Millennium and the beginning of the Second Millennium B.C., and although there is no doubt that the Indo-Europeans had domesticated the horse and entered Iran with their effects securely tied to the backs of their stout, tough mounts, there is some question whether these horses were not greeted with a whinny as they crossed the last pass of the Alborz Mountains.

Carleton Coon, digging in caves in Iran in 1949 (Coon, 1949) described the faunal remains he found and came to the conclusion that the horse was a predominant part of the landscape in the Mesolithic. He writes (p. 43) of the Bisitun Cave near modern Kerman-shah:

The proportion of cervids varies from level to level; it reaches a low of 25 per cent in F minus our horriest epoch, and rises to 70 per cent in E. In this respect, *Cervidae* advance as *Bovidae* retreat. Can this mean a shift from grasslands to forest? The proportion of horses decreases from F minus to D, by the same token.

In addition to the equids from Bisitun Cave, Coon mentions finding equids at Tam-tama in Azerbaijan and Khunik in Khorassan.

Bökönyi (1972) writes:

Nor is it impossible that wild horses also occurred parallel with half asses, at least in some areas of Southwest Asia in the borderland of the distribution area of true horses, but perhaps in other places as well, for representations of wild horses published by Brentjes were found, strangely enough, in southwest Iran.

Thus, although we do not know what this horse looked like, since a qualitative analysis of the bones has not been made, we do know that a horse existed prior to the coming of the Indo-Europeans. It is possible that these horses were an isolated remainder of the Ice Age which swept so many species of animals in front of it down into warmer climates. Although most of these animals returned to their native north as the glaciers receded.

some pockets of animals remained to form isolated breeding groups, slowly evolving specialized characteristics and forms. A separate gene pool would gradually be formed, but many centuries would be required before animals of the same species would not be able to interbreed. Thus, although the zebra, donkey, onager and horse all belonged to the single interbreeding species *Equus pliohippus* aeons ago (Simpson) a great deal of time and geographical separation were required to transform them into separate noninterbreeding species, and, necessarily, a long period of time would be required for a separate species of horse to form in Iran. As the Persian onager (*Equus hemionus onager*) and the Russian onager (*Equus hemionus kiang*), are both reputed to be the same species (although there is a taxonomic argument in progress (Groves and Mazák, 1967), it is reasonably safe to conclude that the horse of the Indo-Europeans and the native horse of Iran, although different in appearance, would still have belonged to the same interbreeding species.

Evidence for an early (*i.e.* pre-Indo-European) ridden horse has not been lacking (Moorey, 1970), nor for one which differed from that of the Indo-Europeans (Littauer, 1971). For years archaeologists have been aware of the existence of a tiny equid on stone carvings in Iran, but students of the graphic arts have often dismissed the animal on the grounds that the small size of the horse was a convention dictated by lack of space. In some cases there might be reason to assume the convention of disproportionate sizes as this method was occasionally used to differentiate the status of two or more figures but this would hardly apply to statuettes or to tribute or military animals of completely different sizes on the same relief.

Persepolis and Darabgird are excellent examples of the latter (Littauer, 1971) with a size difference at Persepolis of 21.8 cm. in the actual relief between the Nisaeon of the Great King and the small tribute horses of the "Lydians." Transposed to the calculated actual size, the difference in height would be 40.0 cm. (Table 2). On the Sassanian relief at Darabgird the difference would appear to be at least that much. The trilingual seal of Darius the Great (ca. 500 B.C.), now in the British Museum, shows a pair of tiny ponies (horses) with very slim legs, small ears and slightly convex faces pulling the royal chariot on a lion hunt. (For a detailed analysis see Littauer, 1971.)

Although these are but a few examples, they serve to indicate that a pony-sized equid was certainly known to the Achaemenians and very possibly admired for its minute size and stylishness. (N.b., almost all ancient horses were "pony-sized" in the modern horse show sense, thus "pony" should be taken to mean a horse *substantially* smaller than average.) That they could have been considered of any practical use beyond acting as mounts for small children or use on special occasions (cylinder seal) is to be doubted as the Nisaeon breed, among others, was far superior in size and strength. Herodotus and Strabo, among other Greek writers, lavished much praise on the Persian horses, repeatedly stressing their "great size" and strength.

Timotheus of Gaza, writing in the 6th Century A.D., states that two different breeds of horses were maintained in the area around modern Kermanshah in western Iran. According to Anderson (p. 27):

The (horses) of the Medes are of moderate size with small ears and heads unlike those of a horse; they are courageous but tire easily in the heat through difficulty in breathing. The Nisaeon horses are remarkable for their great size and feet that shake the earth.

Thus, there is a historical continuity for the small horse from pre-Achamaenian times to about the Islamic conquest in the 7th Century A.D. There may have been documentation of the breeds of horses after this time, and it is highly probable that the polymathic

Persians would not have dismissed their highly prized horses completely, but the great libraries they had accumulated succumbed to repeated raids and invasions by the Moslems and the Mongols.

A passage from Noel (p. 412) gives a possible clue to the way in which some of the small horses found themselves at the Caspian and were subsequently preserved:

The natives of the Kaleh Dasht are a tribe that originally was brought over from Kermanshah, but it is so long ago now that they have lost their tribal characteristics and have settled on the land, mixing with the indigenous population. Besides their barley cultivation and their sheep and cattle, *they breed ponies.*

Identification of the faunal remains in archaeological sites is often complicated by mounds of only scraps of bone. Although entire skeletons are usual in graves where animals have been immolated (*cf.* Kish) to serve as food and transport for the dead, it is much more usual to dig up the remains of food. The problem is further complicated in the case of the *Equidae* as, quite frequently, the only bones available are the long bones (metacarpal and metatarsal) and these are often found fashioned into intricately carved tools (Hilzheimer, 1941). Since these were often the only diagnostic evidence, equid species were usually identified on the basis of the slenderness index of the long bones; *i.e.* the comparative length and width of the bone. On this basis true horses (*Equus caballus*) were usually judged to have the highest index and, descending the scale, the ass came next with the onager occupying the niche of greatest slenderness. Hilzheimer (p. 11 *et seq.*) puts the dividing line at 13.6; anything above is a horse, and anything below either ass or onager.

Although some of the horses measured from Iron Age sites in Europe have a slenderness index below what is considered normal for a horse, their identification was considered secure since the ass was a stranger to the north at that time ((Bökönyi, 1968). However, Bökönyi (p. 27) is quick to point out that "with certain metapodials it cannot be decided by mere measurements whether they (the bones) originate from horses or from asses."

In the Middle East and the steppes of Russia this excessive slenderness of a horse metapodial might have been considered a problem, and, indeed, arguments among zoologists have raged for many years. Duerst (1904) described his tiny equid as a horse even though the slenderness index of the Anau equid was within the range of the onager. This horse was assigned by Duerst to a new subspecies or race and given the name *Equus caballus pumpelli*.

Duerst (p. 397) wrote:

We can, therefore, consider the Anau domestic horse as an altogether Oriental horse resembling the Siberian equid only in the structure of the teeth. The Anau horse is, therefore, the oldest domestic Oriental horse. I designate it, in distinction from other forms of subfossil horses, by the race or subspecies name *Equus caballus pumpelli*. It is, however, difficult to say to what extent this subfossil horse resembles the equine from Maragha which Wilckens from the data of a few incisors and molars, has named *Equus fossilis persicus*.

Hilzheimer (p. 13) goes to great lengths to disprove Duerst using the slenderness of the metapodials as his basis:

I have often already expressed the surmise that the Anau equid may be not an *Equus caballus*, as Duerst assumed, but a half-ass (onager). The correctness of my surmise is proved by the metacarpi from Anau being far below those of horses and in the middle range of those of asses. This

fact voids all theories concerning the origin of the horse that are based on an assumed presence of a true wild horse at Anau.

According to Bökönyi, with the discovery of the Caspian, whose slenderness of bone is obvious even when covered with skin and hair, the matter of equid identification again became a matter of controversy. A study of Caspian bones in the summer of 1969 proved that the slenderness index of Caspian metapodials fell well within the range of the onager and that, therefore, it would be impossible to tell the difference between the two species on this basis alone. Also noted was an unusually narrow hoof. In 1968 Bökönyi wrote:

Comparing the metapodials of half-asses and asses with those of a great number of horses, the vast material of metapodials of the Iron Age horses of Central and Eastern Europe could be used for this purpose it could be stated that, indeed, half-asses are the equids with the slenderest legs. Notwithstanding this indubitable fact, it is also sure with respect to slenderness relations half-asses are highly variable and that the variations of their slenderness index overlap the same index with horses. Thus, not only the slenderness index of a number of European Iron Age horses is below 13.5 but so is that of the Caspian miniature horse. In other words, this means that in certain cases it cannot be stated merely on grounds of this index whether some metapodial had belonged to a half-ass or a horse.

According to Firouz (1969):

From the point of view of archaeology, the separation of the bones of half-asses from those of domestic asses and domestic horses respectively is the most important. In addition, there is another reason why particular attention has been attracted by the sorting out of the remains of the three subgenera. In the northern part of Iran a species of the archaic miniature horse has been discovered. And since representations also confirm the occurrence of such dwarf horses in early historical times (Littauer, 1971) the emergence of their remains among archaeological bone samples is also to be considered. As a matter of fact, for lack of data it cannot be decided yet whether the breed of small horses living there today has any connection with the one seen on the representations; thus a certain caution is advisable in separating the subfossil bone samples of equids according to subgenera, for the recent breed is very close to half-asses with respect to its size and to certain osteological characteristics.

It now seems possible that the myriad onager bones identified in sites from the Mesolithic through the Sassanian period Iran may not have been all onagers, but may have been in large measure bones of small horses. This would be supported by the fact that, although the onager was domesticated in Sumerian times in Mesopotamia and quite possibly used for a brief time in Iran, the horse entered the scene very early (Moorey, 1970), displacing the onager as beast of burden; and, although the onager was and is considered a tasty dish, it would be unreasonable to assume that he was pursued for food as much as the bones would indicate. It is well known that the onager is capable of enormous endurance and that a ridden horse cannot catch up with him. Thus, only very immature animals could be caught with any regularity, but the bones predominantly found have been from mature animals.

Whether it will be possible to positively link the present Caspian miniature horse with the ancient miniature horse will depend on a very careful evaluation of equid material from archaeological sites in the future and a reappraisal of such controversial material as the Anau "horse," Wilckens "horse" from Maragha and the equid remains from Shah Tepe (Zeuner). This should include the Sumerian material especially in light of Moorey's detailed analysis of the terra-cotta relief plaques (Moorey, 1970). Establishing a continuity

of more than 3,000 years for a breed is subject to so many variabilities that one hesitates to mention it; but mention it we must, for without an exhaustive look into the past of this unique little horse we may well lose the last vestige of wild horse in the Middle East. This is not to say that the Caspian is still wild; he is not. But the Przewalskii horse would be no less a remnant of the wild Mongolian horse were he more domesticated than is now, living in zoos. The importance of the Caspian lies in the fact that, if continuity is established, the breed is in all likelihood the ancestor of all of our modern "hot-blooded" horses.

Although continuity may be established by means of the usual bone studies, especially now that we know that the evidence of the metapodials is not foolproof, it is possible to make use of other diagnostic criteria. The head construction of the Caspian is sufficiently unusual to render it quite unlike any other modern breed. The vaulted cranium produced by the exaggerated development of the parietal and frontal bones with a wide interparietal should be traceable from faunal remains in archaeological sites although, unfortunately, the delicate bone of the forehead is often the first to be crushed by falling debris or the workman's pick.

Stone carvings, particularly at Persepolis, show that the horses of the Achaemenian period were all endowed with massively developed foreheads. Whether the exaggeration was artistic convention or actual fact is a subject of some conjecture, but the artists of the period, although stylized, were most faithful to detail. A glance at the powerful head of the Nisaeans of the Great King show a pronounced swelling beginning at the occiput and extending through the parietals, frontal and nasal bones. This formation has occasionally been referred to as "Roman-nosed." A typical Roman Nose, however, begins with a bulging in the frontal bones which extends through the nasal bones, but on no account does the convex profile extend to the occiput. Although a number of other breeds brought as tribute resemble the Nisaeans to a certain extent in this respect, the "Lydian" ponies of the Western tribute team have the vaulted development only of the forehead, giving them a typical "Arab" look. This head formation, so prized among lovers of the Arabian horse, is present today in the Caspian to a degree unknown in other breeds, including the Arabian. According to Brown (p. 51):

The first point of excellence looked for is that the forehead should exhibit a bulge between the eyes up to a point between the ears, and down across the first third of the nasal bones—a formation of the frontal and parietal bones in the form of a shield, known as the *Jibbah*.

There is evidence of continuity for the Caspian through the head formation, the dense slim bone, narrow hoof and size similar to that of the ancient Achaemenian miniature horse. With luck and diligent labor there should be sufficient proof of what has been suspected by so many students of the horse. Then, and only then, can the antiquity and importance of the Caspian miniature horse be fully understood.

Table 1. Measurements on Stallions and Mares

<i>Measurements</i>	<i>Stallions</i>		<i>Mares</i>	
	<i>Range</i>	<i>Average</i>	<i>Range</i>	<i>Average</i>
Length of ear	10-11	10.6	10-11	10.6
Length of head	39-42	40.5	38-42	39.9
Height at withers	107-120	114.0	108-119	112.6
Circumference of muzzle	32-39	35.5	32-36	33.8
Circumference of jaw	62-72	68.0	65-69	66.4
Girth	110-134	123.0	111-140	123.0
Circumference of cannon	12-15	13.8	12-14	12.8

*Note:* All measurements (in cm.) are from Foundation Stock animals.

Table 2. Comparative Data

<i>Measurements</i>	<i>Ponies</i>	<i>Cappadocian</i>	<i>Azerbaijan (?)</i>	<i>Nisaeen</i>
Height at withers	43.2	51	49.5	65
Length of ear	5.6	6.4	8	9
Length of head	14.8	22	18.8	25.7
Withers to dock	38.5	43	40	56
Chest to haunch	50.5	61	60	75
Elbow to fetlock	21	23	25	30
Height of groom (shoulder to ground)	62	63	63	64

*Notes:* Assuming the Nisaeen at 14.2 hands (*see* Anderson). The stone reliefs of Persepolis have been scaled down by a factor of 2.25. At a ratio of 1:2.25, the Nisaeen measures 146.25 as opposed to the 99.0 of the "pony."

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